

Name: _____

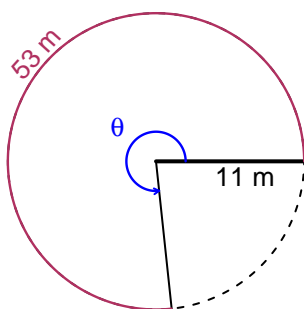
Date: _____

Trig Final (TEST v660)

- You can use a calculator (like [Desmos](#))
- You should have a unit-circle with special angles and coordinates marked.

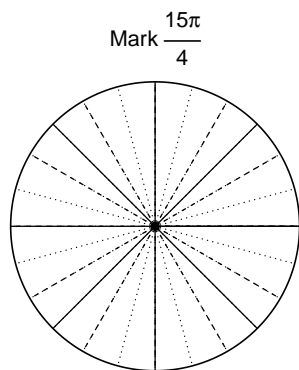
Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The radius is 11 meters. The arc length is 53 meters. What is the angle measure in radians?

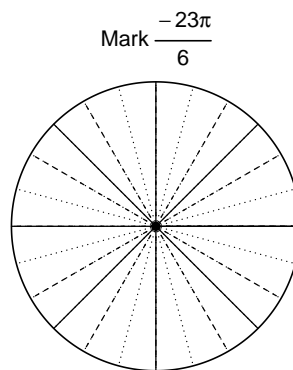


Question 2

Consider angles $\frac{15\pi}{4}$ and $\frac{-23\pi}{6}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\sin\left(\frac{15\pi}{4}\right)$ and $\cos\left(\frac{-23\pi}{6}\right)$ by using a unit circle (provided separately).



Find $\sin(15\pi/4)$



Find $\cos(-23\pi/6)$

Question 3

If $\tan(\theta) = \frac{-40}{9}$, and θ is in quadrant IV, determine an exact value for $\cos(\theta)$.

Question 4

A mass-spring system oscillates vertically with a frequency of 7.63 Hz, an amplitude of 5.98 meters, and a midline at $y = -4.54$ meters. At $t = 0$, the mass is at the maximum height. Write an equation to model the height (y in meters) as a function of time (t in seconds).